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III. *A short account of the Nature and Vertues of the Pyrmont Waters; with some Observations upon their Chalybeat Quality. Communicated by Dr. Frederick Slare, R. S. Soc.*

HAVING procur'd about a dozen Quarts of *Pyrmont* Waters this last Summer, I made some Tryals with them. I found by the Taste that they contain'd a rich Chalybeat Vertue, and also made a very brisk and lively impresson on the Palate, more grateful and spirituous, than the best *Spaw* Waters I ever tasted. The *Spaw* Waters are look'd upon as most excellent, if they Sparkle a little in the Glasse; but these in Summer time, when pour'd into the Glass, nay sometimes even in the Bottle, as soon as the Cork was open'd and the Air was admitted, would make a notable Ebullition, somewhat like bottled Cyder, tho' this was soon over; but they did yet continue their snart and brisk Taste, and high Chalybeat Relish to the last Drop, tho' we were some Hours in Drinking them off. In the Winter time, these Waters do not Sparkle, nor Ferment, at least mine did not; but they were not carefully preserv'd, being expos'd in cold Cellars, where our Beer or Wine stood in the Winter; and yet notwithstanding, they lost not the Chalybeat Taste, and also retain'd a very pleasant brisk Gust. These Waters have been reckon'd in the Number of the *German Saur Brunnen* or *Acidule*, and some of my Friends to whom I gave a Glass of the Water, have ascrib'd to it a sharp Taste, and have been ready to run away with a possess'd Opinion of its being Sour: but when I requir'd them to call back that hasty Assertion, and to consider it better, whether that Taste was really

Sour or Acid, they have been forc'd to recant and confess, that the smart and brisk Taste misled them to call it Acid or truly Sour. Thus Cyder and soft Ale when Bottl'd, will give such an acute Affection to the Palate, when it is far from being Sour: And even *Volatile Alkalies* of *Sal Armoniac* or of Hartshorn, may be made to give the like pungency to the Tongue.

In order to a more nice Enquiry, whether any Acidity were discoverable in these *Pymont* Waters, we dropt in considerable Quantities both of Spirit of Hartshorn, and of Spirit of *Sal Armoniac*, both justly prepar'd; but could not discover the least Luctation or Motion to appear upon this Conjunction, as it usually does with an Acid.

I made a yet more nice and certain Examen of these Waters, by mixing Milk with them, sometimes in equal, sometimes in double proportion; and in various degrees of Warmth, both in Lukewarm degrees, and also with a boyling Heat, but I could not perceive any Curdling. But rather on the contrary, the Water preserv'd the Milk from Coagulation, for four or five Days, even in *September*, it being hot Weather.

Take a very little Gall in Powder, about half a Grain to a Glass of a quarter of a Pint; this does in a Moment render it turbid, and make a dark Purple, especially if you stir it: but if you drop the Powder on the Surface of the same Water, it then causes a fine blew Tincture. If you will make a very fine Tincture pleasant to the Spectator, Take five Leaves of strong Green Tea, put them into the bottom of a Glass holding a quarter of a Pint, and you will see those Leaves unfold themselves, and in a quarter of an Hour, tinge the Water with such a Cerulous azure Blue, that few Vegetables do afford the like. We observe, that the longer these Leaves, or any other Stipticks, (which are the

Precipitators) do stay together, the more they degenerate into a deep Purple, or even to an Atramentarious Colour.

In reference to the internal Use of these Waters, I drank about a Quart at a time, after this manner. I first began with the *Spaw* Waters, which I procur'd very good, and drank them for a Week, and they agreed very well. I then drank the *Pymont* Waters for three or four Days, and continu'd the use of these Waters alternately, until I had drank about twenty Days. By the result of my Experiment it seem'd to me very plain, that the *Pymont* Water was more agreeable, gave more Strength and Spirit, and was as much or more preferable for its internal Vertue, as for its excelling the other in a brisker and more sprightly Taste.

There is another Excellency in these Waters which will make them more useful to us, than any Foreign *Chalybeat* Waters we yet know, because these will keep better; they are not so soon spoil'd by any accidental Insinuations of Air, as the *Spaw* are subject to be. The *Chalybeat* Mineral is here thoroughly dissolved and well united, and mix'd in this Water, so that it does not easily precipitate: for which Reason it may also the better pass the *vasa lactea*, and even enter into the Mass of Blood it self, and work the more considerable Effects. That this is not a bare Hypothesis may be prov'd by this Experiment.

Having suffer'd the *Spaw* Water to be expos'd in a Bottle which was half full, and unstopt 12 Hours, I examin'd it, and found it tast just like common Water; but the *Pymont* Waters that were open'd to the Air after the same Manner, tast'd strong of the Mineral, and gave their Tincture as at first; nay, they continued thus for full two Days, and perhaps might have done so longer, but I thought that Time suffic'd.

There

There remain several other Experiments to be made, in order to a further Search into the Excellencies of this noble Water, but this I cannot do at present for want of a Quantity, which I hope to obtain the next Summer; for they can with more Ease be brought into *England* than the *Spaw*. I may also fairly conclude, that since the *Spaw* has been very beneficial to our Patients in Chronical Diseases, these Waters of a much superior Virtue will surpass them in conquering many of our obstinate Distempers.

*Some Additions to the aforesaid Account of the
Pymont Waters*

HAVING had lately some Discourse about a Purging Quality contained in these Waters, I am now inquiring into the Truth of this Question, whether they in Reality do contain any Purging Ingredients or Properties.

I evaporated about a Quart of this Water *ad siccitatem*; I then poured on the *reliquia* some Rain-Water, enough to dissolve and take up the Salts, and exhal'd that Water, and had a Grane or two of the Salts, that tasted *muriatic*, such as most River and Pump Waters give. It is well known that the Purging Waters have a very bitter Taste, and by the most learned Doctor *Grew pie Memoriae*, and an illustrious Fellow of this Society, that Salt was called *Sal Catharticum amarum*, which distinguish'd it from all other Species of natural Salts: that of the *Pymont* Water abovementioned has no Relation to this, but to the Sea-Salt, not being in the least bitter.

It is also well known, that unless our Waters be impregnated with a considerable Quantity of this bitter Salt, it will not purge at all: Two or three Granes signifie nothing, nor have the least Cathartic Power. For Example, Put two Drams of the purging Salts to a Quart of common Water; and this Quantity will give but a Stool or two to one who is naturally very easie to work upon. I have examin'd several other *Chalybeat* Waters, and found much the like Ingredients, and never any that I could suspect to carry any purging Properties.

I think we can much better demonstrate that the *Chalybeat* Waters do contain Stiptic and Restraining Virtues, because they owe their Birth to the *Iron Mineral*, and more particularly to the *Pyrites*, which Doctor *Lister* suggests, (not without some Reason) to be the Parent even of all *Iron Oars*, as it is doubtless the Cause of all *Chalybeat* Waters: Thus I have often examined the Solution of the *Pyrites* by the Rain-Water at *Oestford*, and at other Places where Copperas is made, and found it a very strong *Chalybeat* Water. It is from this *Minera* we have our strong Stiptic and constringent Medicines, for external and internal use; we have our Powders and Salts of *Steel*, or *Vitriol of Mars*, from hence; nay, even those obstinate and inveterate *Diarrheas* which have baffled the Force of all Medicines, have, by a judicious Use of *Tunbridge* and other Iron Waters, received a Cure.

But notwithstanding all we can say, it will be retorted, that there is Matter of Fact and Experience against us, that the Waters really do purge at *Pymont*, where they are drank.

This we do allow to be true, that *Tunbridge* Waters do not only purge but sometimes vomit. when drank hastily and in great Quantity; but our Physicians have

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corrected this Irregularity, and we hear of no such Complaints, where they observe a just *Regimen*: And we do all agree, that those Waters are, in their own Nature, binding, and do oft require some opening Medicine. The Quantities of Water drank at *Pyrmont* are very large, often two or three *English* Quarts. It is no Wonder that their Weight forces them thro' the Bowels; for any common Water, drank hastily, and in such Quantity, will do the same. Whereas, if you take this Method, and will drink *Pyrmont*, or any other *Chalybeat* Waters leisurely, *viz.* a Pint-Glass in an Hour, or rather two Half-Pint Glasses, you may drink three Pints in so many Hours without Danger of losing them by Dejection. But if any one will be careful, and take this Caution with him, he will scarce fail of Success; that is, let him be very quiet and still, both in Body and Mind; the less he stirs or walks, the better he will pass off his Waters by Urine. And tho' this will appear a Paradox, especially to those Physicians who practise abroad, and commend to their Patients much Action in walking, yet I know I have both Reason and Experience on my Side. To avoid Prolixity I shall not declare them at this Time, and shall only ask leave to mention one Observation I have made, that none of our *English* Steel Waters do strike such a Purple as the Foreign celebrated *Chalybeat* Waters do for ours do give a more turbid and dark Colour, and the worse the Waters are, the blacker Sediment they make: Those of *Islington* abound with a coarse *Oker*, the Mineral is not well dissolved, but gives an *atramentarius* Colour; but the *Pyrmont* Waters excell all I have happened to examine, in its bright *Cerulious* Lustre.

N. B. Most of the Experiments alledg'd by Dr. Slare, in the foregoing Discourse, were likewise by him shewn before the
Royal

Royal Society, Feb. 28. last: and it was found that the Pymont Waters gave a much brighter Tincture with Galls and Tea, and had a much more exalted Chalybeat Taste than the Spaw; and a small Quantity of each being kept for some time in Bottles, to compare them, the Pymont was found to have retained its Virtues much better than the Spaw. The President, and several of the Members present, having drunk a Glass of it, found it of a very agreeable Relish, and to sit easie on the Stomach.

IV. Remarks on the second Paper in the History of the Royal Academy of Sciences, for the Year 1711. concerning the Cause of the Variation of the Barometer: to shew that the Way of accounting for it in that Paper is insufficient, and that the Experiment made use of to prove what is there asserted, does no way prove it. By J. T. Desaguliers, M. A. F. R. S.

The Paper is as follows.

‘ **I**T appears by the Barometer, that when it rains, or a little before. Rain, the Air commonly becomes lighter.

‘ That it must rain when the Air becomes lighter it is easie to imagine; for the imperceivable Particles of Water, that swim about in the Air in prodigious Quantity, not being sufficiently sustain’d when the Air has lost a certain Degree of its Weight, begin to fall, and several of them joining together in the Fall, make Drops of Rain. So when about half of the Air is drawn out of the Recipient of the Air-Pump,

‘ (and